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REPORT OF THE SEMINAR ON THE PREPARATION AND USE OF  
POPULATION AND HOUSING CENSUS TABULATIONS

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## I. INTRODUCTION

### A. BACKGROUND AND OBJECTIVES OF THE SEMINAR

1. With a view to evaluating and utilizing the results of the population and housing censuses taken around 1960, the Latin American Governments held a Seminar in 1959 whose basic purpose was to identify the information considered essential at that time for meeting the needs of public authorities, researchers and the private sector 1/. Similarly with the aim of helping to organize and co-ordinate the censuses that Governments intended to take in 1970, a seminar was held in May 1968 to discuss matters relating to the planning and content of work in connection with the censuses 2/. Other helpful material in considering the possibilities of using census data included the guidelines on the selection of census topics and the application of census data to demographic studies and development planning set out at a number of international gatherings 3/.

2. As a result of the foregoing, the majority of the Governments in the region have already conducted their population and housing censuses, or will do so in the next few years, in line for the most part with the principles and recommendations developed by the United Nations 4/. Although appropriate tabulations have been designed in virtually all the countries of the region, there is a desire to improve the presentation of information

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1/ See Report of the Seminar on the Evaluation and Utilization of Population Census Data in Latin America (ST/TAO/SERC/46-E/CN.9/Conf. 1/1/Rev.1), Santiago, Chile, 1 December 1959.

2/ See report of the Seminar on the Organization and Conduct of Population and Housing Censuses for Latin America (E/CN.12/810), Santiago, Chile, 31 May 1968.

3/ See Population Commission, Report on the Fifteenth Session Official Records of the Economic and Social Council, Forty-eighth Session, Supplement No 3 document (E/4768), paragraph 37; and Population Commission, fifteenth session, Geneva, November 1969, "Report of the Interregional Seminar on Application of Demographic Data and Studies to Development Planning" (document E/CN.9/223).

4/ See United Nations, Principles and Recommendations for the 1970 Population Censuses (United Nations publication, Sales No 67.XVII.3) and the report of the Ninth Session of the Committee on the Improvement of National Statistics of the Inter-American Statistical Institute, held at Caracas in 1967.

and to adapt it to the growing needs of economic and social planning, particular importance being attached to information requirements as regards analysis by regions and the examination of imbalance within countries, as well as to the urgent need to speed up the processing of advance tabulations covering priority topics. Lastly, the exchange of experience between the producers and users of census information, at the stage of preparing the tabulations, helps to optimize the use of census data.

3. With a view to responding to the desire of the Latin American Governments to ensure optimum use of population and housing census data, the ECLA secretariat, the United Nations Statistical Office and the United Nations Fund for Population Activities, in co-operation with the Latin American Demographic Centre, decided to convene a technical meeting to study the use and preparation of population and housing census tabulations. The meeting was also in response to ECLA resolution 306 (XIV), which recommended that the secretariat should intensify its efforts to help the countries of the region to prepare the statistics which are considered of priority importance in the task of appraising the progress of the International Strategy for the Second United Nations Development Decade.

#### B. ORGANIZATION OF THE MEETING AND ATTENDANCE

4. The Seminar on the Preparation and Use of Population and Housing Census Tabulations was held at ECLA headquarters, at Santiago, Chile, from 14 to 19 August 1972.

5. The Seminar was attended by participants from Argentina, Bolivia, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Netherlands, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay and Venezuela. Other participants included representatives of the Latin American Demographic Centre (CELADE), the Regional Employment Programme for Latin America and the Caribbean Area (PREALC), the Food and Agriculture Organization of the United Nations (FAO), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the Pan-American Health Organization (PAHO), the Inter-American Statistical Training Centre (CIENES), the Inter-American Statistical Institute (IASI), and the United States Bureau of the Census. Also were present members of different divisions of ECLA and the Latin American Institute of Economic and Social Planning (ILPES), and of the United Nations Statistical Office.

6. The Seminar was opened by Mr. Pedro Mendive, Assistant Executive Secretary of ECLA, who emphasized how important it was for Latin America to improve its population and housing tabulations and indicated the benefits of such tabulations in research and economic and social planning in the region, especially if they were prepared in a co-ordinated manner and adapted to the needs of users.
7. An official from the United Nations Population Programme described the possibilities which existed of securing assistance from the United Nations Fund for Population Activities for census work and demographic work, in general and the manner in which such assistance should be requested.
8. At the first working meeting, the following participants were elected Rapporteurs: Mr. David Vera (Paraguay); Mr Horacio Somigliani (Argentina), Mr. Hildebrando Araica (Panama), and Mrs. Graciela de Valdez (Peru).
9. The following agenda for the Seminar was adopted at the first working meeting:
  1. Preparation and use of housing tabulations
  2. Preparation and use of population tabulations
  3. Use of census tabulations for purposes of demographic analysis
  4. Techniques for revising, correcting and tabulating census results by computer.
10. At the closing meeting, Mr. Francisco Azorín, Director of the Statistical Division of ECLA, addressed participants. He stated that the Seminar should be viewed as a first step towards more frequent and more detailed contacts and exchanges of ideas that would ensure constant progress in statistics for economic and social development policy and planning. Mr. Julio Páez Celis (Venezuela) replied on behalf of the participants.

## II. ACCOUNT OF PROCEEDINGS

### 1. Use and preparation of population and housing tabulations

11. The participants in the Seminar had before them a number of basic and information documents submitted by the ECLA secretariat (see annex I). These documents emphasized the need to plan tabulations in co-operation

/with users

with users, and noted certain important aspects having to do with the classification and presentation of data, especially as regards the grouping of census information by regions. The documents also considered certain non-technical aspects of data processing, outlined the limits on the production tabulations, indicated what could be expected of tabulations, and - based on the possibilities offered by statistical sampling and electronic computing techniques - suggested an order of priority for tabulations. In addition, the documents included housing and population tabulations, some 60 of these being proposed as a complement to those previously suggested by the United Nations and the Committee on the Improvement of National Statistics (COINS). Most of these provide for a classified presentation of data by main regions and cities, as well as for advance tabulations. In the case of population tabulations, a general reference was included regarding the practical utility of each, to provide participants with criteria for analysing their value.

12. In the preparation of these documents, the secretariat consulted specialists in a number of the divisions of ECLA, ILPES and CELADE.

13. The documents state that the purpose of the proposed tabulations is to enable Governments, in the light of their own information needs, to select those which are most appropriate for the situation of their country and their research requirements. It was stressed that the tabulations do not affect international comparability as progress has been made in standardizing criteria, definitions and methodology for conducting censuses and publishing census data.

14. The participants agreed to devote priority attention to considering the new tabulations contained in documents ST/ECLA/Conf.43/L.2 (I) and (II) that were not included in recommendations made by international agencies for the 1970 censuses. As a result of the discussions, changes were made in the presentation of the tabulations and in certain details, such as the scope and limits of the classifications used. A list of these new tabulations, with the modifications suggested in the Seminar, is given in annex II, together with some tabulations proposed by the participants.

15. It was stated in the Seminar that a tabulations plan must not only respond to specific needs in various fields, but must also provide the maximum of useful information for applying such systems as the integrated system of demographic, manpower and social statistics and its links with the system of national economic accounts, the draft complementary system of statistics on the distribution of income, consumption and wealth, and

the System of National Accounts, either as a frame of reference for particular years or as a basis for designing subsequent research in more detail and at greater frequency 5/.

16. The participants noted that in view of the progress made in computer techniques, it was now fairly easy to provide in the planning of tabulations for the formulation and inclusion of indexes, rates and other indicators and relations, without increasing the cost of processing too much.

17. It was also stated that the cost of publishing census results and the time taken to do so could be considerably reduced if tabulations were designed in such a way that upon leaving the computer they could be photomechanically processed without modification and printed immediately.

18. The Seminar noted that fundamental importance should be attached to obtaining census results in good time. In this connection it was stated that proper precautions should be taken at the time the census was planned to provide for alternative procedures for compiling, processing and publishing data, and for adequate financial means to ensure that data were available quickly. In this same connection, participants discussed the use of sampling techniques to obtain advance tabulations.

19. Some participants, citing experience in their own countries, indicated that the idea of preparing advance tabulations based on samples should be considered in relation to the total time-span allotted for processing the census results, as there would be no justification for using sampling to obtain advance tabulations if the final tabulations could be obtained in good time.

20. Other participants stated that there had been few occasions when the final results of censuses in countries of the region had been published in good time, because among other reasons the resources allocated to statistical offices were not sufficient to permit this. It was stated that sampling made it possible to prepare special tabulations for purposes of planning and demographic analysis quickly and at low cost, as well as providing an opportunity for preparing tabulations on the census family or household without interfering with the processing of the normal tabulation programme.

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5/ See documents E/CN.3/432 and 425, and Studies in Methods, Series F, No 2, Rev. 3.

21. It was also stated that account had to be taken in formulating the tabulations of the needs of future research using sampling techniques and of the need to provide a suitable frame for selecting samples from the universe.

22. The Seminar agreed on the need for tabulations to assist in undertaking analyses by ecological and socio-economic regions. It was stated that regions could be determined a priori, but that before this could be done decisions had to be made on the limits and content of the regions and conclusions had to be reached that took account of the interests and information needs of specialists in very different fields. It was pointed out that, provided proper provision was made in the preparatory work for the census, summary information could be extracted for working with small census units which could provide data that would help to develop criteria for determining regions and, suitably rearranged, would yield several sets of tabulations, depending on the criteria or concepts of the region that suited the needs of each type of user.

23. Participants were informed of the possibilities offered by the method of geographic co-ordinates in identifying enumeration units and in linking the data from population and housing censuses with data from other inquiries containing a spatial distribution of information.

24. The Seminar considered the question of classifying census data by urban and rural geographic divisions, but reached the conclusion that it was not possible to evolve a definition in this respect that would be applicable to all countries irrespective of their level of development, since the concept of what constitutes an urban area could be defined on the basis of a number of different criteria, for example population density, volume of population in a locality, legal or administrative limits established under law, or other factors, such as the supply of services, the proportion of the population engaged in secondary or tertiary (non-agricultural) activities, etc.

25. The Seminar considered that it would be an extremely difficult task to arrive at a consensus of opinion on a standard set of satisfactory international and interdisciplinary criteria for classifying population into its urban and rural components not only because the characteristics of each country differed, but also because concepts changed depending on the statistical use to be made of the data thus classified. Consequently, it would be advisable for tabulations to be presented with classifications by size of locality, leaving it to the user to classify the data into the

/the urban



the urban and rural components best suited to his purposes, having regard also to the need for international comparability and to the earlier censuses conducted in the country.

26. Furthermore, the Seminar noted that it was advisable and necessary to make greater use of classifications of the data of population and housing censuses by the volume of population in localities, cross-classified by characteristics features of the population and housing, including economic variables (type of activity, occupation, branch of activity, occupational category, etc.), educational variables (literacy, school attendance, level of education), and personal variables (sex, age, relationship to head of household, marital status, place of birth). Using the classification in this way would, not only provide very valuable results in itself but would also yield a set of reasonably practical and objective indicators for use in studying certain demographic, economic and social factors. Accordingly, it was recommended that countries should do all they could to achieve this objective, although it was noted that the classification intervals suggested in the tabulation could be summarized, expanded or modified in accordance with the needs and resources of each country.

27. It was stated that the priorities for the preparation and publication of tabulations should as far as possible be fixed in the light of the urgency with which they were needed. National and urban planners were among the users that were most concerned about receiving information rapidly on certain topics or special areas. Nevertheless, for reasons of economy and general convenience, there should be a logical sequence for the preparation of tabulations, with priorities being fixed jointly by the organizers of the census and the users. Some participants noted that the persons responsible for processing data should also be consulted, in order to verify whether it was feasible to obtain certain tabulations in the light of the time and resources available.

28. For purposes of processing data, each tabulation unit (household, housing unit, dwelling, etc.) must be defined during the programming phase in order to ensure that the units corresponded exactly to those for which data would be collected or for which data was available.

29. In collecting this information systematically for each tabulation unit that it was planned to use, a programme could be prepared that took account of overall needs in relation to the moment when tabulations were to appear, as well as of the possibilities of taking advantage of the relations between tabulations.

30. In preparing the tabulations programme, it was necessary to decide which data were to be published and the level of geographical detail to be given. It might be that certain data would not be published because they were not of general interest or because they referred to such small areas that publication would be too voluminous and expensive. Such data could, however, be stored and made available upon request. In some cases they could be supplied to users upon payment of a sum to cover the cost of publication.

31. Table A in document ST/ECLA/Conf.43/L.2 (I) gives the general breakdown that can be undertaken to build up an overall picture of the tabulation programme being prepared. In this case, the tabulations correspond to those included in the Principles and Recommendations for the 1970 Population Censuses 6/ and also those in annex II, but the analyses could also be applied to the tabulations for a population census. It shows clearly what tabulation units have been used to obtain tabulations, presenting a general picture of the geographical classifications used throughout the tabulation programme, and this general view makes it possible to see whether provision has been made for the tabulation of all the topics included in the census, without omissions or duplications, and to what extent the data corresponding to each topic are used in the tabulation programme.

32. During the seminar, the point was made that persons responsible for population and housing censuses should try to learn more about other kinds of data compilations and the relevant recommendations. A clearer understanding of the nature of data in other fields should bring a clearer understanding of the ways in which various statistical series could be linked together and thus put to better use.

33. The United Nations Statistical Office is currently working on the development of an integrated system of statistics. Preliminary suggestions as to the series, classifications and social indicators of each sub-system to be integrated, including housing, are contained in two United Nations documents entitled "A system of demographic, manpower and social statistics series, classifications and social indicators" (ST/STAT/49) and "A system of demographic and social statistics and its links with the system of national economic accounts" (E/CN.12/432).

(a) Housing tabulations

34. Housing census data are mainly used for assessing housing conditions at the time of the census, estimating housing requirements and establishing a statistical basis for the formulation of housing programmes. Complete

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6/ Op. cit.

information on the use of census data for such purposes and methods of estimating housing needs can be found in "Statistical indicators of housing conditions" 7/ and "Methods of estimating housing needs" 8/ and in the reports of the regional seminars on the formulation of housing programmes and the statistics required for these purposes 9/. By comparing census information with data from earlier censuses, it is possible to observe chronological changes in the housing situation, evaluate the efficiency of housing programmes implemented during the inter-census period, and forecast future trends. Since housing data are not a great deal of use without population statistics, their utilization will necessitate a close look at population censuses also.

35. The seminar agreed on the importance of cross-classified population and housing tabulations and recommended that more of this type of tabulation should be prepared.

36. More specifically, housing census data should indicate the kinds of dwellings occupied by the population and the number of persons without housing. They should show the reasons for any shortage or lack of housing and the possibilities open to households to improve their housing conditions or to participate in programmes designed to reduce housing shortages.

37. The data should also quantify the supply of dwellings, by principal type, in relation to the number of households and indicate occupancy in terms of the number of persons per room and the number of households sharing dwellings. The census should provide information on the availability of such basic services as running water, toilets, electricity, etc. From data on construction materials and the year or period of construction, estimates could be made of replacement requirements.

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7/ United Nations publication, Sales No.: 62.XVII.7

8/ United Nations publication, Sales No.: 67.XVII.15

9/ Report of the Seminar on Housing Statistics and Programmes for Africa (Copenhagen, 31 August to 15 September 1966) (United Nations publication, Sales No.: 68.II.K.7); Report of the Seminar on Housing Statistics and Programmes for Asia and the Far East (Copenhagen, 25 August to 14 September 1963) (United Nations publication, Sales No.: 65.II.F.12); Report of the Latin American Seminar on Housing Statistics and Programmes (Copenhagen, 2 to 25 September 1962) (United Nations publication, Sales No.: 63.II.G.14).

38. The census should provide information on the number of households owning or renting the dwellings they occupy and the proportion of vacant units.

39. It was suggested at the meeting that between censuses countries should carry out research into the relationship between housing and population variable and between these variables and those of other allied fields. Such research should not be conducted immediately before the census, since this would not usually leave time to make full use of results obtained.

40. The tabulations analysed appear in annex 2.

(b) Population tabulations

41. During the discussions, concern was voiced regarding the definition and scope of the concepts of family and household, this concern being a reflection of the increasing desire of Government to allow for such factors in planning and in solving the region's economic and social problems. It was accordingly decided to request the Director of the seminar to ask the Executive Secretary of ECLA to convene a working group of experts on household and family statistics to discuss and propose definitions, classifications, data-collection instruments, tabulations and analytical methodologies to serve as guidelines and bases for research by Latin American countries. Participants stressed the importance of this subject and requested that it should receive preferential treatment.

42. With regard to tabulations providing information on internal migration, the participants recognized the difficulty of devising tabulations which analyse migration according to urban or rural origin, not only because of the problem of defining such concepts, but also because of variations in localities with the passage of time and the difficulty of obtaining accurate and reliable data. They nonetheless emphasized the need to do everything possible to prepare such tabulations and suggested that appropriate research be started in countries' experimental censuses. The first step towards a solution could perhaps be achieved through a classification by size of locality, the latter being divided into only two groups based on the number of inhabitants. Attention was drawn to the importance of external migration in certain countries, which would make it necessary to consider the inclusion of this subject in their censuses.

43. Where tabulations refer to low-yield activities, it is essential that preliminary country and/or regional studies be carried out to establish more clearly which activities are involved and how they can

/be grouped

be grouped together for analytical purposes. It was suggested, for example, that unemployed persons should be shown separately.

44. The participants agreed that tabulations containing classifications by income bracket could not give a clear picture of a country's income distribution. They were unanimously opposed to obtaining this kind of data from censuses because of the unreliability of the answers given, especially where the incomes of non-wage-earners and income from property are concerned. It was stressed, however, that censuses form a suitable framework for carrying out subsequent surveys of data utilized in income distribution analyses. A similar conclusion was reached with regard to underemployment. It was recommended that the unemployed population should be studied in greater detail and that specific tabulations should be prepared for this category.

45. As regards education tabulations, classifications by level of education must be adapted in each country to the existing educational system and situation (school drop-out rate, possibility of access to university education, compulsory nature of primary education, etc.).

46. As regards the study of fertility, the participants agreed to add special tabulations cross-classifying the number of women and number of live births with the employment, level of education and income of the spouses. The suggestion was also made that a tabulation similar to No. 106 should be incorporated, but with a cross-classification by group of activity instead of by type of activity. It was agreed that the category "10 or more live births" of the tabulations should also give the number of children and the number of women involved.

47. The participants pointed out that advance sample tabulations must originate from the selection of primary tabulations under the general plan and that the classifications and cross-classifications should be adapted in certain cases to the size of the sample. It was recognized that it was impossible to adopt a single plan for all countries, as any plan must vary according to specific needs which in turn are necessarily affected by economic and social planning requirements.

48. Finally, it was pointed out that sampling was not only important as a means of obtaining advance data, but also as a means of evaluating and correcting census information and preparing special tabulations. The latter could serve two fundamental purposes: on the one hand, to provide information on specific population groups, of which might be useful for policy design and planning (for example, unemployment, international

/migration illiteracy,

migration illiteracy, indigenous population, etc.) and, on the other, to test new analytical systems or approaches to the interpretation of particular phenomena.

## 2. Use of census tabulations for demographic analysis

49. Discussion centred around the document entitled "Illustrations of the analysis of census tabulations" (ST/ECLA/Conf.43/L.6), prepared by the Latin American Demographic Centre (CELADE).

50. Because of the complexity of the subject and the multiple authorship of the document, several representatives of CELADE participated in its presentation to the seminar so as to cover the various aspects involved. Attention was drawn to the analytical possibilities of the tabulations contained in document ST/ECLA/Conf.43/L.2 (II), particularly those that were considered fundamental to the examples given.

51. The Seminar devoted special attention to the sections dealing with the factors influencing natural changes in the population - i.e., fertility and mortality - and certain aspects of the formation of supposedly under-employed population groups.

52. As regards the study of fertility and mortality on the basis of census data, emphasis was placed on the analytical possibilities presented by the inclusion of more or less new questions designed to obtain information on:

- (i) the number of children born alive to females of fertile age during the year immediately preceding the census;
- (ii) the number of children surviving;
- (iii) orphans by age group.

53. It was stressed that question (i) could be used in conjunction with data on the total number of children born alive to the women concerned up to the date of the census. This use, which implies the utilization of the demographic techniques proposed by Professor William Brass, has recently been promoted in Latin America, in some instances with promising results. The seminar examined illustrations of differential analyses of fertility, specifically in the light of level of education, and stressed the possible use of the results in the formulation of hypotheses on future fertility trends.

54. During the discussion of information on surviving children, it was pointed out that the inclusion of this type of question in population censuses served two purposes: (i) to prepare estimates of child mortality and (ii) to improve information on the total number of children born alive. It was noted that estimates of child mortality based on data on surviving children could be considered fully reliable, that is to say, they reflected the real mortality rate. These estimates are supplemented by estimates of adult mortality based on the comparison of the population by sex and age in two successive censuses.

55. The problem of where to include census questions on fertility gave rise to an interesting discussion supported by examples; it was finally thought best to place them before the question on marital status. It is interesting to note that in the Trinidad and Tobago census questions on fertility are asked of females aged 15 or over who are not attending school.

56. The possibility was also discussed of obtaining estimates of fertility and mortality at the regional level from these questions. It was pointed out that analytical techniques are based, among other working hypotheses, on the assumption that the population is "closed", i.e., without migratory movements, so that if these hypotheses are not fulfilled at the regional level, the usefulness of the results is limited, especially in the case of fertility estimates.

57. The Seminar also took up the question of the use of data on motherless orphans and made the point that female mortality could be estimated from the proportion of such orphans by age group. Illustrations from the experimental census of Costa Rica, Ipacará (Paraguay) and Guatemala contributed further information on the subject.

58. As regards nuptiality, special emphasis was placed on the fact that the analysis of census data is concentrated basically on the distinction between single and non-single persons, which makes it possible to examine the evolution of the proportions of both groups by age, hence permitting valuable measurements of the phenomenon.

59. The seminar also actively discussed illustrations of the analytical use of census information on economic characteristics of the population. Careful attention was given to CELADE's proposal that underemployment of economically active manpower could be detected by the formation of specific groups defined by a set of demographic, educational and economic variables.

CELADE's estimate was of particular interest, since it was very close to that which the Latin American Institute for Economic and Social Planning (ILPES) obtained by a different method. Both estimates agreed to within 40 per cent.

60. In view of the size of the problem of underemployment, it was stressed that further studies needed to be conducted on the subject, based on information obtained from surveys specifically designed for the purpose. Such studies were essential in order to understand the problem more fully, it was stated, although census information in the form submitted by CELADE should nonetheless be utilized as an initial approximation. The latter could involve variables that were different from or additional to those employed in the example submitted.

61. As regards the study of the economic characteristics of the population on the basis of census data, the Seminar attached great importance to the attempts of various Latin American countries in recent censuses to improve the quality and quantity of the information compiled. It was deemed highly desirable that permanent research and experimentation should be carried out on methods and procedures for the collection of data of this type.

### 3. The processing of census data

62. In an opening statement presenting the documents entitled "Computer review and edit of a population and housing census" (ST/ECLA/Conf.43/L.4) and "CENTS, a technique for the computer tabulation of population and housing census data" (ST/ECLA/Conf.43/L.3), the following aspects were considered:

- (a) the existence of three types of error in the processing of census data: omission of entries, inadmissible entries and admissible but incoherent entries;
- (b) the existence of two sources of error: the census schedule and the processing.

63. The seminar considered methods of detecting and correcting errors and making up for information that was lacking and it was agreed that such work could be done by computer, provided that it was preceded by manual revision and checking and that some of the information lacking could be reconstituted, especially when the use of a computer would be very expensive.

64. One way of correcting census data is to use hot decks or dynamic assignment, which enable useful information to be obtained.



65. As a starting point, the results of another census or other surveys can be used for reference, with progressive incorporation of the correct information being processed. Participants also mentioned the standards that have to be respected when assigning attributes. They stressed the need for close contact between the census or statistical experts and the programmers in this work, since the former are best able to indicate the correction criteria that the latter will utilize.

66. It was noted that there is no up-to-date parameter-card programme for correcting errors as there is in the CENTS deck. However, a correction programme can easily be devised by utilizing previously tested routines and subroutines; the variables would be referenced with mnemonic labels.

67. It was agreed that, when making assignments, a daily report must be prepared of corrections made, type of errors, frequency, code assigned etc. The records should show what information has been recorded by assignment (this can be done by means of an identification code). It was thought advisable to test error correction programmes so as to measure their effectiveness by means of a sample containing information representative of the country.

68. Participants agreed that the system of assigning errors by computer was a good way of speeding up the preparation of tabulations for printing, although the necessary precautions must be taken to prevent the results from being distorted.

69. The CENTS deck was considered the optimum system for tabulating census data. Expert assistance in this matter can easily be obtained through ECLA, CELADE, OAS and the United States Bureau of the Census.

Annex I

LIST OF DOCUMENTS

Working documents

ST/ECLA/Conf.43/L.1	Agenda
ST/ECLA/Conf.43/L.2	Preparation and use of population and housing census tabulations I. Part I: Housing census tabulations II. Part II: Population census tabulations
ST/ECLA/Conf.43/L.3	CENTS, a technique for the computer tabulation of population and housing census data
ST/ECLA/Conf.43/L.4	Computer review and edit of a population and housing census
ST/ECLA/Conf.43/L.5	Content and use of population and housing census tabulations
ST/ECLA/Conf.43/L.6	Illustrations of the analysis of census tabulations

Reference documents specially prepared for the Seminar by ECLA

1. Carlos Cavallini, Regional Adviser in Sampling, Algunas consideraciones sobre el muestreo y su aplicación en los censos de población y vivienda, ECLA 1972
2. Julio Pérez Celis, Estudio de la urbanización en base a los tamaños de los centros poblados, 1972
3. National Statistics and Census Institute (Argentina), Plan de tabulaciones del censo nacional de población, familias y vivienda de 1970

Reference documents

1. ECLA, Guía bibliográfica de estadísticas demográficas y sociales (ST/ECLA/Conf.41/L.8), 1971
2. ECLA, Planificación de un censo de población y vivienda para el método FERT, Seminar on Population and Housing Censuses for Directors of Statistics and Censuses Office, 1969
3. Inter-American Statistical Institute, Report of the ninth session of the Committee on Improvement of National Statistics (COINS), 1968
4. Inter-American Statistical Institute, Report of the first session of the Subcommittee on Demographic and Housing Statistics of the Committee on Improvement of National Statistics, 1967
5. United Nations, A System of Demographic and Social Statistics and its Links with the System of National Economic Accounts (E/CN.3/432), 1972
6. United Nations, Handbook of Population and Housing Census Methods, Studies in Methods, Series F 16, Parts III and IV.
7. United Nations, Principles and Recommendations for the 1970 Housing Census, Statistical Papers, Series M 45
8. United Nations, Principles and Recommendations for the 1970 Population Census, Statistical Papers, Series M 44
9. United Nations, The Use of Computers for Error Detection and Correction in Population and Housing Censuses, 1971
10. United States Bureau of the Census, CENTS, Census Tabulation System. An Approach to the Computer Tabulation of Data from a Population and Housing Census, Series ISP 4, No.1, Washington, D.C., 1972

Annex II

A. TABULATIONS WHICH MAY BE PREPARED IN A HOUSING CENSUS

Number	Source	Title
1	UN (F.16. No.1) IASI (No.1)	Living quarters, households, family nuclei and persons in household, by type of living quarters (Recommended)
2	UN (F.16. No.1A)	Living quarters, households, family nuclei and persons in households by type (minimum classification) of living quarters
3	UN (L.2(I) No.1B)	Comparison of the available supply of acceptable housing with the number of households and persons living in households; total country, urban, rural, principal localities
4	UN (F.16 No.2) IASI (No.11)	Households and persons in households, by type of living quarters cross-classified by sex, marital status, national and/or ethnic group and age of head of households (Recommended)
5	UN (F.16. No.3) IASI (No.13)	Households and persons in households, by type of living quarters cross-classified by type of activity, occupation and sex of head of household (Recommended)
6	ECLA	Households and population in households by type of activity of head of household and type of housing unit.
7	ECLA	Economically active population in households by occupational status and type of housing unit
8	ECLA	Households and population in households by level of education of head of household and type of housing unit

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| 9  | UN (F.16. No.4)                | Conventional dwellings, by number of rooms cross-classified by number of occupants per dwelling (Recommended)  |
| 10 | UN (L.2(I) No.4A)              | Conventional dwellings by distribution of selected average densities (persons per room) and number of rooms: total country, urban, rural, principal localities.            |
| 11 | UN (L.2(I) No.4B)              | Distribution of conventional dwellings by number of rooms and distribution of households by number of household members: total country, urban, rural, principal localities |
| 12 | ECLA                           | Households whose heads are immigrants, by number of rooms, type of housing unit and number of persons in the household   |
| 13 | IASI (No.2)                    | Number of occupied housing units by number of occupants according to tenure, type of housing unit and number of rooms  |
| 14 | UN (F.16. No.4A)               | Conventional dwellings by number of rooms  |
| 15 | UN (F.16. No.4B)               | Households in conventional dwellings, by number of persons in the household cross-classified by number of rooms occupied by the household                                  |
| 16 | UN (F.16. No.5)                | Households in conventional dwellings, by number of households per dwelling (Recommended)   |
| 17 | UN (F.16. No.6)<br>IASI (No.4) | Living quarters, households, and persons in living quarters, by type of living quarters cross-classified by water supply system (Recommended)                              |
| 18 | UN (F.16. No.6A)               | Living quarters, households and persons in living quarters by type of living quarters cross-classified by water supply system, and source of water supply                  |

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| 19 | UN (F.16. No.6B)                | Living quarters, households and persons in living quarters by type of living quarters cross-classified by water supply system, shared or exclusive use and availability of hot and cold water  |
| 20 | UN (F.16. No.7)                 | Occupied living quarters, households and persons in living quarters by type of living quarters cross-classified by type of toilet facilities (Recommended)   |
| 21 | UN (F.16 No.7A)                 | Occupied living quarters, households and persons in living quarters, by type of living quarters cross-classified by type of toilet facility, shared or exclusive use and, for living quarters without toilets, availability of alternate facilities        |
| 22 | UN (F.16. No.7B)<br>IASI (No.8) | Occupied living quarters, households and persons in living quarters, by type of living quarters cross-classified by type of toilet facility and type of sewerage system  |
| 23 | UN (F.16. No.7C)                | Selected types of occupied living quarters, households and persons in the living quarters by type of living quarters, type and number of toilets cross-classified by capacity of living quarters in terms of the number of persons able to be accommodated |
| 24 | UN (F.16. No.8)                 | Occupied conventional dwellings and persons in dwellings, by type of lighting (Recommended)  |
| 25 | UN (F.16. No.8A)                | Occupied conventional dwellings and persons in dwellings, by type of lighting and source of electricity  |
| 26 | UN (F.16. No.9)                 | Households and persons in conventional dwellings by tenure of household (Recommended)  |
| 27 | UN (F.16. No.9A)                | Households and persons by tenure of household cross-classified by type of living quarters occupied   |

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| 28 | CELADE/ECLA                     | Households by tenure of housing unit and type of activity by occupational status of head of household  |
| 29 | CELADE                          | Housing units and households by type (one-person, nuclear, extended, etc.) and population in households, by type of housing unit and tenure  |
| 30 | UN (F.16. No.10)<br>IASI (No.9) | Vacant conventional dwellings by type of vacancy (Recommended)   |
| 31 | UN (L.2(I) No.10A)              | Vacant conventional dwellings by type of vacancy: total country, urban, rural, principal localities  |
| 32 | UN (F.16. No.10)                | Living quarters by type of occupancy and type of vacancy   |
| 33 | UN (F.16.No.11)<br>IASI (No.14) | Conventional dwellings, by year (or period) of construction of building (in which dwelling is located) cross-classified by type of building and construction material of walls (Recommended)   |
| 34 | UN (F.16. No.11A)               | Conventional dwellings, by year (or period) of construction of building (in which dwelling is located) cross-classified by type of building and construction material of walls, roof and floor |
| 35 | UN (L.2(I) No.11B)              | Estimated useful life of dwellings and time period for replacement: total country, urban, rural, principal localities.   |
| 36 | UN (L.2(I) No.11C)              | Number of dwellings constructed annually during the period 1961-1970 and date of construction per thousand population: total country, urban, rural, principal localities                       |
| 37 | CELADE                          | Occupied housing units, rooms and population by principal building material of walls, roof and floors of housing units   |

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| 38 | UN (F.16. No.12)<br>IASI (No.12) | Households and persons in households, by type of living quarters cross-classified by type of activity, industry and sex of head of household  |
| 39 | UN (F.16. No.13)                 | Households occupying dwellings, by type of owner of the dwelling cross-classified by tenure of the household and availability of piped water and toilet facilities in the dwelling  |
| 40 | UN (F.16. No.13A)                | Households occupying dwellings, by type of owner of the dwelling cross-classified by tenure of the household and availability, of piped water and toilet facilities in the dwelling (water supply and toilet facilities cross-classified) |
| 41 | UN (F.16. No.13B)                | Households occupying dwellings, by type of owner of the dwelling cross-classified by tenure of the household and rent paid for dwellings  |
| 42 | UN (F.16. No.14)<br>IASI (No.10) | Occupied conventional dwellings by number of bedrooms cross-classified by number of occupants per dwelling  |
| 43 | UN (F.16. No.15)<br>IASI (No.7)  | Occupied conventional dwellings, households and persons in dwellings, by availability in the dwelling of cooking facilities   |
| 44 | UN (F.16. No.15A)                | Occupied conventional dwellings, households and persons in dwellings, by availability of cooking facilities in the dwelling or in the building and according to shared or exclusive use   |
| 45 | UN (F.16. No.15B)                | Living quarters other than housing units by number of persons that can be accommodated cross-classified by number of kitchens and/or kitchenettes   |



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| 46 | UN (F.16. No.16)                 | Occupied conventional dwellings, households and persons in dwellings, by availability in the dwelling of bathing facilities   |
| 47 | UN (F.16. No.16A)<br>IASI (No.5) | Occupied conventional dwellings, households and persons in dwellings, by availability and location of bathing facilities cross-classified by shared or exclusive use of facilities and availability of hot and cold water |
| 48 | UN (F.16 No.16B)                 | Living quarters other than housing units by number of persons that can be accomodated cross-calssified by number of baths and/or showers  |
| 49 | UN (F.16. No.17)<br>IASI (No.3)  | Rented conventional dwellings, by amount of rent paid monthly for the dwelling cross-classified by number of rooms in the dwelling  |
| 50 | UN (F.16. No.17A)                | Rented conventional dwellings by amount of rent paid monthly for the dwelling cross-calssified by number of rooms in the dwelling and availability of piped water and toilet facilities                                   |
| 51 | UN (F.16. No.18)                 | Households in rented conventional dwellings by amount of rent paid monthly by the household cross-classified by number of households in the dwelling  |
| 52 | UN (F.16. No.18A)                | Households in rented conventional dwellings, by amount of rent paid monthly by the household cross-classified by number of households in the dwelling classified according to whether they are tenants or subtenants      |

E. TABULATIONS WHICH MAY BE PREPARED  
IN A POPULATION CENSUS

Number	Source	Title
1	UN (M.44. No.1) IASI (No.1)	Total population and population of major civil divisions, by sex (Recommended)
2	UN (M.44 No.2) IASI (No.2)	Population in localities by size-class of locality and sex (Recommended)
3	UN (M.44. No.3)	Population of principal localities and of their urban agglomerations, by sex (Recommended) <u>1/</u>
4	UN (M.44. No.6) IASI (No.5)	Population by single years of age and sex (Recommended)
5	UN (M.44. No.7) IASI (No.6)	Population by five-year age groups and sex (Recommended)
6	UN (M.44. No.8) IASI (No.7)	Population by marital status, age and sex (Recommended)
7	UN (L.2 (I) No.13)	Growth rate of the population and forecast for the future
8	UN (M.44. No.4) IASI (No.3)	Households by number of family nuclei, aggregate number of family nuclei, total population and size of household (Recommended) <u>2/</u>
9	ECLA (L.2(II) No.8)	Households by age of head and population in households by type and composition of family
10	ECLA (L.(II) No.9)	Households by type of family and size of household

1/ The category "Remaining urban agglomeration" was added.

2/ The plan of the tabulation was changed and the title expanded.

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| 11 | ECLA (L.2(II) No.10)           | Population in households by type of family and size of household   |
| 12 | UN (M.44. No.5)<br>IASI (No.4) | Population in households by relationship to head of household, marital status and sex (Recommended)                        |
| 13 | ECLA (L.2(II) No.12)           | Heads of household and other members of the household by relationship to head, age of head and size of household           |
| 14 | ECLA (L.2(II) No.13)           | Households by type of family and number of rooms   |
| 15 | ECLA (L.2(II) No.14)           | Population in households by type of family and number of rooms   |
| 16 | ECLA (L.2(II) No.15)           | Households and population in households by type of household possessions   |
| 17 | ECLA (L.2(II) No.16)           | Households by number of persons employed, income bracket and size of household   |
| 18 | ECLA (L.2(II) No.17)           | Heads of household and other members of the household by sex and age and by age of head of household                       |
| 19 | ECLA (L.2(II) No.18)           | Heads and other members of the household by type of activity and age, and by type of activity and age of head of household |
| 20 | ECLA (L.2(II) No.19)           | Households by type of family and by sex, marital status and age of head of household                                       |
| 21 | ECLA (L.2(II) No.20)           | Population in households by type of family and by marital status and age of head of household                              |
| 22 | ECLA (L.2(II) No.21)           | Households by type of family, and by type of activity, status and sex of head of household                                 |
| 23 | ECLA (L.2(II) No.22)           | Population in households by type of family, and by type of activity and status of head of household                        |

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| 24 | ECLA (L.2(II) No.23) | Households by type of family, and by branch of economic activity and age of head of household                      |
| 25 | ECLA (L.2(II) No.24) | Population in households by type of family, and by branch of economic activity and age of head of household        |
| 26 | ECLA (L.2(II) No.25) | Households by type of family, and by socio-economic status and age of head of household                            |
| 27 | ECLA (L.2(II) No.26) | Population in households by type of family, and by socio-economic status and age of head of household              |
| 28 | ECLA (L.2(II) No.27) | Households by duration of residence in locality of head of household, type of family and age of head               |
| 29 | ECLA (L.2(II) No.28) | Population in households by duration of residence in locality of head of household, type of family and age of head |
| 30 | UN (L.2(I) No.15)    | Rate of formation of households and forecast for the future  |
| 31 | ECLA (L.2(II) No.29) | Population by place of birth, present place of residence, sex and age  |
| 32 | ECLA (L.2(II) No.30) | Population by place of previous residence, present place of residence, sex and age                                 |
| 33 | UN (M.44 No.31)      | Population by place of usual residence, place of previous residence and sex  |
| 34 | ECLA (L.2(II) No.32) | Population by place of previous residence, present place of residence, duration of residence, age and sex          |
| 35 | UN (M.44. No.30)     | Population by duration of residence in locality and in major civil division, age and sex                           |

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| 36 | ECLA (L.2(II) No.34) | Population 15 years of age and over, by duration of residence, marital status, age and sex  |
| 37 | ECLA (L.2(II) No.35) | Population ...years of age and over, by duration of residence, area of origin, type of activity, age and sex  |
| 38 | ECLA (L.2(II) No.36) | Economically active population by duration of residence, occupation, age and sex  |
| 39 | ECLA (L.2(II) No.37) | Economically active population by duration of residence, type of activity, age and sex  |
| 40 | ECLA (L.2(II) No.38) | Economically active population by duration of residence, status, age and sex  |
| 41 | ECLA (L.2(II) No.39) | Population 10 years of age and over by duration of residence, literacy, sex and age   |
| 42 | ECLA (L.2(II) No.40) | Population ... years of age and over by duration of residence, educational attainment, age and sex  |
| 43 | ECLA (L.2(II) No.41) | Population 5-24 years of age by duration of residence, school attendance age and sex  |
| 44 | ECLA (L.2(II) No.42) | Economically active population by duration of residence, status, educational attainment and sex   |
| 45 | ECLA (L.2(II) No.43) | Immigrant population by area of origin, area of present residence, sex and age  |
| 46 | ECLA (L.2(II) No.44) | Economically active population employed in low-paid activities, with residence of five years or less in the corresponding civil division of the country, by status, occupation, literacy, age and sex |

47	ECLA (L.2(II) No.45)	Female population ... years of age and over by duration of residence, type of activity and age
48	UN (M.44. No.9) IASI (No.8)	Native and foreign-born population by age and sex (Recommended)
49	UN (M.44. No.10) IASI (No.9)	Foreign-born population by country of birth, age and sex (Recommended)
50	UN (M.44. No.11) IASI (No.10)	Native population by major civil division of birth, age and sex (Recommended)
51	ECLA (L.2(II) No.49)	Population by place of birth and length of residence in country, according to age and sex <u>3/</u>
52	ECLA (L.2(II) No.50)	Foreign-born population, by sex and age
53	ECLA (L.2(II) No.51)	Foreign-born population by year of arrival during the preceding ten years, according to age on arrival and sex
54	ECLA (L.2(II) No.52)	Foreign-born population by year and period of arrival, according to age on arrival and sex
55	ECLA (L.2(II) No.53)	Foreign-born population by five-year period of arrival, according to age on arrival and sex
56	ECLA (L.2(II) No.54)	Foreign-born population by age on arrival, according to present age and sex
57	ECLA (L.2(II) No.55)	Economically active foreign-born population, by branch of economic activity, occupation and sex
58	ECLA (L.2(II) No.56)	Foreign-born population by civil status and age; women by number of children and number of live births, according to civil status and age of mothers

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3/ Include tabulation No.48.

59	UN (M.44. No.12) IASI (No.13)	Population ... years of age and over by type of activity, age and sex (Recommended)
60	UN (M.44. No.13) IASI (No.14)	Economically inactive population, by functional category, age and sex (Recommended)
61	UN (M.44. No.14) IASI (No.15)	Economically active population by branch of economic activity, age and sex (Recommended)
62	UN (M.44. No.15) IASI (No.17)	Economically active population by occupation, age and sex (Recommended)
63	UN (M.44. No.16) IASI (No.19)	Economically active population by status, age and sex (Recommended)
64	UN (M.44. No.17) IASI (No.21)	Economically active population by status, branch of economic activity and sex (Recommended)
65	UN (M.44. No.18) IASI (No.23)	Economically active population by status, occupation and sex (Recommended)
66	UN (M.44. No.19) IASI (No.25)	Economically active population by branch of economic activity, occupation and sex (Recommended)
67	UN (M.44. No.20) IASI (No.27)	Economically active population by occupation, marital status, age and sex
68	ECLA (L.2(II) No.66)	Economically active population by number of months worked in the year, type of activity and sex
69	IASI (No.16)	Economically active employed population ... years of age and over by branch of economic activity, sex and age group
70	IASI (No.18)	Economically active employed population ... years of age and over by occupation, sex and age group
71	IASI (No.20)	Economically active employed population ... years of age and over by occupational status, sex and age group

72	IASI (No.22)	Economically active employed population ... years of age and over by occupational status, sex and branch of economic activity
73	IASI (No.24)	Economically active employed population ... years of age and over by occupational status, sex and occupation
74	IASI (No.26)	Economically active employed population ... years of age and over by branch of economic activity, sex and occupation
75	IASI (No.28)	Economically active employed population ... years of age and over by occupation, sex, marital status and age group
76	ECLA (L.2(II) No.74)	Economically active employed population by hours worked per week, branch of economic activity and sex
77	ECLA (L.2(II) No.75)	Economically active employed population by branch of economic activity, status, hours worked per week and sex
78	ECLA (L.2(II) No.76)	Economically active employed population by hours worked per week, desire for more work and income bracket
79	ECLA (L.2(II) No.77)	Economically active employed population by income bracket, occupation and sex
80	ECLA (L.2(II) No.78)	Economically active employed population by income bracket, status, age and sex
81	ECLA (L.2(II) No.79)	Economically active employed population by income bracket, status and level of education
82	ECLA (L.2(II) No.80)	Economically active unemployed population by age, branch of economic activity, duration of unemployment and sex
83	ECLA (L.2(II) No.81)	Economically active population by relationship to head of household, type of activity, marital status and sex



84	UN (M.44. No.21) IASI (No.29)	Female population ... years of age and over by type of activity, marital status and age (Recommended) <u>4/</u>
85	ECLA (L.2(II) No.83)	Female population ... years of age and over type of activity, marital status and age
86	ECLA (L.2(II) No.84)	Female population ... years of age and over by educational attainment, type of activity, marital status and age
87	ECLA (L.2(II) No.85)	Female population 15 years of age and over by number of children alive, marital status, type of activity and age
88	ECLA (L.2(II) No.86)	Economically active female population by status, marital status and age
89	UN (M.44. No.34)	Population by socio-economic status, age and sex
90	UN (M.44. No.22) IASI (No.30)	Population 10 years of age and over by literacy, age and sex (Recommended) <u>5/</u>
91	UN (M.44. No.23) IASI (No.31)	Population ... years of age and over by educational attainment, age and sex (Recommended) <u>6/</u>
92	UN (M.44. No.25) IASI (No.33)	Population ... to 24 years of age, by school attendance, single years of age and sex (Recommended) <u>2/</u>
93	UN (M.44. No.24) IASI (No.32)	Population ... to 24 years of age, by school attendance, educational attainment, age and sex (Recommended)

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4/ The status "Living in consensual union" was added.

5/ Five-year age groups were substituted for the ten-year groups.

6/ Age groups were added and the ten-year groups were converted to five-year groups.

2/ The category "Not stated (but under 25)" was eliminated.

94	ECLA (L.2(II) No.92)	Population ... years of age and over, by type of activity, educational attainment, age and sex
95	ECLA (L.2(II) No.93)	Population ... years of age and over, not economically active, by functional categories, educational attainment, age and sex
96	UN (M.44. No.26) IASI (No.34)	Economically active population, by educational attainment, age and sex (Recommended)
97	ECLA (L.2(II) No.95)	Economically active population, by industry, educational attainment, age and sex
98	ECLA (L.2(II) No.96)	Economically active population, by status, educational attainment, age and sex
99	ECLA (L.2(II) No.97)	Economically active population by age, status, occupation, educational attainment and sex
100	UN (M.44. No.35) IASI (No.43)	Population which has successfully completed a course of study at the third level of education, by educational qualification, age and sex
101	ECLA (L.2(II) No.99)	Economically active population engaged in low-income activities by status, occupation, literacy, age and sex
102	UN (M.44.No.27) IASI (No.36)	Female population 15 years of age and over by age and number of children born alive (Recommended)
103	ECLA (L.2(II) No.101)	Female population 15 years of age and over, by number of children born alive, marital status and age <u>8/</u>
104	UN (M.44. No.28) IASI (No.37)	Female population 15 years of age and over by age and number of children born alive (Recommended)

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8/ Includes the previous tabulation

105	ECLA (L.2(II) No.103)	Female population 15 years of age or over with or without children born alive, by age, total number of children born alive, and age of mothers
106	ECLA (L.2(II) No.104)	Female population 15 years of age and over, with or without children born alive in the last year, by age and number of children born alive in the last year, in order of birth and by age of the mother
107	UN (M.44. No.29) IASI (No.38)	Female population 15 years of age and over, by age, number of children born alive and educational attainment (Recommended) <u>9/</u>
108	ECLA (L.2(II) No.106)	Female population aged 15 to 59 by number of children born alive, type of activity, status and age
109		Female population aged 15 to 59 by number of children born alive, by type of activity, status and age <u>10/</u>
110	ECLA (L.2(II) No.107)	Economically active female population 15 years of age and over, by educational attainment, age and number of children born alive
111	UN (M.44. No.39) IASI (No.39)	Female population 15 years of age and over, in first marriage, by age at marriage, duration of marriage and number of children born alive
112	ECLA (L.2(II) No.109)	Motherless population by age
113	UN (M.44. No.32) IASI (No.42)	Population by country of citizenship, age and sex

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9/ The category "no education" was added.

10/ It was suggested during the Seminar that this tabulation should be included.

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| 114 | UN (M.44. No.33)      | Population by language (mother tongue, usual language or ability to speak one or more languages) age and sex |
| 115 | UN (M.44. No.36)      | Population by national and/or ethnic group, age and sex  |
| 116 | ECLA (L.2(II) No.113) | Population by national and/or ethnic group, educational attainment, age and sex <u>11/</u>                   |
| 117 | UN (M.44. No.33)      | Population by main source of livelihood, age and sex   |
| 118 | UN (M.44. No.37)      | Population by religion, age and sex  |

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11/ Includes previous tabulation.